

IN THE CLAIMS

Please replace claims 1-6, 18, 19, 23, 36, 42, and 43 with the following amended claims.

A marked-up version of the amended claims is attached hereto as Appendix A.

1. (Three times amended) An optical assay device for the detection of an analyte of interest in a fluid sample comprising:

a support containing channels;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, positioned on said support;

an attachment layer positioned on said optically functional layer; and

an analyte specific receptive layer positioned on said attachment layer,

wherein said support, optically functional layer, attachment layer, and analyte specific receptive layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said support, and (ii) to provide laminar flow of sample through each of said layers of said device when a fluid sample is introduced into said device.

2. (Three times amended) An optical assay device for the detection of an analyte of interest in a fluid sample comprising:

a support containing channels;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, positioned on said support; and

an attachment layer positioned on said optically functional layer to provide nonspecific capture of said analyte,

wherein said support, optically functional layer, and attachment layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said support, and (ii) to provide laminar flow of sample through each of said layers of said device when said fluid sample is introduced into said device.

3. (Three times amended) An optical assay device for the detection of an analyte of interest in a fluid sample comprising:

a porous support;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, comprising discrete, optically functional particles embedded in said support configured and arranged to provide channels through said optically functional layer;

an attachment layer positioned on said particles; and

an analyte specific receptive layer positioned on said attachment layer,

wherein said attachment layer and analyte specific receptive layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said optically functional layer, and (ii) to provide laminar flow of sample through each of said layers of said device when said fluid sample is introduced into said device.

4. (Three times amended) An optical assay device for the detection of an analyte of interest in a sample comprising:

a porous support;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, comprising discrete, optically functional particles embedded in said support configured and arranged to provide channels through said optically functional layer; and

an attachment layer positioned on said particles to provide nonspecific capture of said analyte,

wherein said attachment layer is configured and arranged (i) to provide channels through said attachment layer that are continuous with said channels in said optically functional layer, and (ii) to provide laminar flow of sample through each of said layers of said device when said fluid sample is introduced into said device.

5. (Three times amended) An optical assay device for the detection of an analyte of interest in a sample comprising:

a porous support;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, containing channels positioned on said support;

an attachment layer positioned on said optically functional layer; and

an analyte specific receptive layer positioned on said attachment layer,

wherein said attachment layer and analyte specific receptive layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said optically functional layer, and (ii) to provide laminar flow of sample through each of said layers of said device when said fluid sample is introduced into said device.

6. (Three times amended) An optical assay device for the detection of an analyte of interest in a sample comprising:

a porous support;

an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, containing channels positioned on said support; and

an attachment layer positioned on said optically functional layer to provide nonspecific capture of said analyte,

wherein said attachment layer is configured and arranged (i) to provide channels through said attachment layer that are continuous with said channels in said optically functional layer, and (ii) to provide laminar flow of sample through each of said layers of said device when said fluid sample is introduced into said device.

18. (Four times amended) Method for constructing an optical assay device with laminar flow properties, comprising the steps of:

providing a support comprising channels;

providing an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, on said support;

providing an attachment layer on said optically functional layer; and

providing an analyte specific receptive layer on said attachment layer,

wherein said support, optically functional layer, attachment layer, and analyte specific receptive layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said support, and (ii) to provide laminar flow of sample through each of said layers or through each of said layers and across one or more of said layers of said device when said fluid sample is introduced into said device.

19. (Four times amended) Method for constructing an optical assay device with laminar flow properties, comprising the steps of:

providing a support comprising channels;

providing an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding, on said support; and

providing an attachment layer on said optically functional layer to provide nonspecific capture of said analyte,

wherein said support, optically functional layer, and attachment layer are configured and arranged (i) to provide channels through each of said layers that are continuous with said channels in said support, and (ii) to provide laminar flow of sample through each of said layers or through each of said layers and across one or more of said layers of said device when said fluid sample is introduced into said device.

23. (Three times amended) A composition comprising:

a support comprising channels, and an optically functional layer, an optical property of which is detectably altered upon a change in mass on said optically functional layer related to analyte binding,

wherein said optically functional layer is configured and arranged (i) to provide channels through said optically functional layer that are continuous with said channels in said support, and (ii) to provide laminar flow of sample through said optically functional layer towards said support when a fluid sample is introduced onto said optically functional layer.

36. (Amended) The device of any of claims 1, 2, 3, 4, 5 or 6, wherein said analyte is selected from the group consisting of antigens, antibodies, receptors, ligands, chelates, proteins, enzymes, nucleic acids, DNA, RNA, pesticides, and herbicides.

39. (Amended) An assay device for the detection of an analyte of interest comprising:
a support,
an optically functional layer positioned on said support, and
an attachment layer positioned on said support to provide nonspecific capture of said analyte, said attachment layer comprising diamond-like carbon.

40. (Amended) An optical assay device for the detection of an analyte of interest comprising:
a support,
an optically functional layer positioned on said support, [and]
an attachment layer positioned on said optically functional layer comprising diamond-like carbon, and
an analyte specific receptive layer positioned on said attachment layer.

42. (Amended) The device of claim 39 or 40, wherein said attachment layer non-specifically binds analyte selected from the group consisting of antigens, antibodies, receptors, nucleic acids, polysaccharides, lipopolysaccharides, enzymes, proteins, microorganisms, fragments derived from microorganisms, haptens, drugs, food contaminants, environmental agents, ligands, and chelators.

43. (Amended) The device of claim 41, wherein said receptive layer comprises biomolecules selected from the group consisting of antigens, antibodies, receptors, nucleic acids, polysaccharides, lipopolysaccharides, enzymes, proteins, microorganisms, fragments derived from microorganisms, haptens, drugs, food contaminants, environmental agents, ligands, and chelators.